بسم ِ اللّه الرّحمن الرّحيم
INFECTION CONTROL
EDUCATION PROGRAM

Isolation Precautions
Isolating the disease not the patient
The Purpose is

- To protect compromised patient from environment

- To prevent the spread of communicable diseases.
- Full awareness of epidemiology of all infectious diseases.
- Isolation rooms.
- Continuous education of Nurses.
Transmission of microorganisms within a HCF

Source of the microorganism.
Susceptible host.
Mode of transmission.
CHAIN OF INFECTION

SOURCE

HOST

PATIENT
EMPLOYEE
ENVIRONMENT
EQUIPMENT
VISITORS

Method of Transmission

Airborne

Vector

Vehicle

Direct
Indirect

CONTACT

AGE
Nutrition
Immunity
DISEASE
Treatment
Skin Injury
Life Style
Socioeconomics
Levels of Isolation Precautions

- Standard precautions.
- Transmission based precautions.
Standard precautions (SP)

For all hospitalized persons regardless of their diagnosis and possible infectious status.

To reduce the risk of transmission of blood-born pathogens and other pathogens present in body substances.

Applied to blood, body fluids, secretions, excretions, non-intact skin, mucous membrane; and to contaminated surfaces or equipments.
GLOVES
Before touching blood, body fluids, mucus membranes, non-intact skin or performing venipuncture CHANGE gloves after contact with each patient.

WASH
Wash hands immediately after gloves are removed. Wash hands and other skin surfaces immediately if contaminated with blood or other body fluids.

GOWN / APRON
For procedures likely to generate splashes of blood or other body fluids.

MASK
Masks and protective eyewear or face shields for procedures likely to generate splashes of blood or other body fluids.

SHARPS
Dispose of needles with syringes and other sharp items in puncture-resistant container near point-of-use.

DO NOT RECAP BY HAND
Do not recap needles or otherwise manipulate by hand before disposal.

RESUSCITATION
Mouthpieces of resuscitator bags should be available to minimize need for emergency mouth to mouth resuscitation.

WASTE / LINEN
Waste and soiled linen should be handled in accordance with disposal policy and local law.
A- Hand hygiene

- Hand washing
- Use of antiseptics.

The single most important measure.

Done

- After touching the patient or potentially contaminated items.
- After removing gloves.
- Before taking care of another patient.
Efficacy of Hand Hygiene Preparations in Reduction of Bacteria

Good  Better  Best

Plain Soap  Antimicrobial soap  Alcohol-based handrub

ICC  HEEP  ICEP
B- Personnel Protective Equipment:

droplets & splashes

- Gloves
- Mask
- Gown
- Goggles.
C- Aseptic Techniques:

- Employing measures to minimize contamination of medical devices during insertion, care and maintenance.

- To reduce the patient's risk of infection.
D- Reprocessing of instruments:

- Single use items are discarded as clinical waste.
- Reusable equipments are cleaned and sterilized before reuse.
- **No special precautions** are needed for dishes, glasses, cups and eating utensils.
Instrument Processing

Decontaminate

Sterilize
- Chemical
- High pressure steam
- Dry heat

Clean

High-Level Disinfect
- Boil
- Steam
- Chemical

Dry/Cool and Store

icc, HEEP, ICEP
E- Environmental cleaning:
Routine daily cleaning and disinfection of environmental surfaces are indicated.

F- Proper waste disposal:
To protect HCWs, waste handlers and the community.
G- Linen:
- Handle soiled linen with a minimum of agitation and put in double-bags.
- Workers in the laundry must consider all laundry contaminated.

H- Occupational health and blood borne pathogens:
- Disposable syringes.
- Needles not bent or recapped.
- Avoid mouth to mouth resuscitation method.
I- Deceased patients:

Even without any information about the presence of infection in the deceased, Standard Precautions should always be followed.
Levels of Isolation Precautions

- Standard precautions
- Transmission based precautions
Modes of Transmission

1. Contact
   - Direct
   - Indirect
2. Airborne
3. Droplet
4. Vehicle
5. Vectors

FIGURE 1: How Microorganisms Are Acquired

- Direct
- Indirect
- Droplet
- Contact
- Airborne
- Vehicle
- Vectorborne
Transmission-based Precautions

Used for patients with **known** or **suspected** infection with pathogens that can be transmitted

By

**airborne, droplet or contact** routes.
Appropriate precautions and notification must commence on clinical suspicion; laboratory confirmation is not necessary.

Medical practitioners, have an obligation to inform the District Surveillance Unit; and all such cases should be reported to a member of the Infection Control Team.
Types of transmission-based Precautions

- Airborne precautions.
- Droplet precautions.
- Contact precautions.
- Combination of airborne and contact precautions.
Airborne precautions

Small droplet nuclei ($\leq 5$ microns)

Suspended in the air for long periods and travel long distance (several meters).

Tuberculosis, Measles and Varicella (disseminated zoster).
A single room under negative pressure ventilation:

- 6 air change/hour & discharge air to outside or filter it using HEPA filter.

- **A high efficiency mask** for all persons entering the room (N95 respiratory mask).

- The **door** must be kept **closed at all times**.

- Only personnel that have **immunity** against varicella, TB and measles should care for these patients.
Respiratory Protection

PAPR

N95 Respirators
Droplet precautions

- Droplets >5 microns.
- Do not last very long in the air, and travel short distance (less than 1m.).
- Transmission requires close distance between the infected source and the recipient.
- Meningococcal meningitis, Haemophilus influenza type B, Pertussis, Diphtheria, Streptococcal pharyngitis, Multi-resistant Streptococcus pneumoniae.
Large respiratory droplets
A private room is necessary. If not possible, maintain a distance of at least 1 meter between patients and visitors.

A standard mask & gloves for all entering. If possible, the patient may put on a surgical mask.
Private room:

- Isolated area must be separated from other patients by a door and corridor; with an anteroom, its own toilet and washing facility.

- If not available, place the infected patient at one end of the room, close to a sink.
Cohort isolation

If more than one patient is affected (e.g. in an outbreak) they should be nursed together in one room, and looked after by dedicated staff.

Limited movement and transport of isolated patients are essential.
Contact precautions

- Is the most important and frequent mode of transmission of nosocomial infections.
- Used to prevent the transmission of communicable diseases which are transmitted by direct or indirect contact with the patient.
- Usually continued for the duration of illness.
- *Respiratory syncytial virus*
- disseminated *Herpes simplex*
- Major skin infection
- infection or colonization with multi-drug resistant organisms: MRSA, VRSA, VRE and multi-drug resistant Gram -ve bacilli (producing ESBLs)
- Massive uncontrolled bleeding or diarrhoea
- Heavy dispersal of skin scales (infected large burns)
A single room is essential.
Cohorting.
Consider the epidemiology of the organism.
Gloves, gown & mask (depending on type of infection & degree of contact).
Limit movement of the patient out of the room.
Combination of airborne and contact precautions

- Used for patients with **highly transmissible and dangerous infections**.
- The mattress and pillows must have impermeable intact covers.
- The patient’s charts should be kept outside the room.
- **Hand Hygiene:** before leaving the room.

*When leaving the room, the door should be pushed open from the outside by an assistant in order to avoid touching the door handle which may be contaminated. When outside, repeat the hand-disinfection*
Decision Markers on Isolation

1. ACDP classification of organisms (2,3,4) (5,10,40).
2. The probable route of transmission (15,10,5,0).
3. Evidence for transmission (Published, consensus, no con, no evidence) (10,5,0,-10).
4. Occurrence of infection in the hospital (Sporadic, endemic, epidemic) (0,-5,-5).
5. Antibiotic resistance (Yes or No) (5,0).
6. Susceptibility of other patients (Yes or No) (10,0).
7. Dispersal characteristics of patient (High, medium, low risk) (10,5,0).
**Risk Assessment Scoring System for Assigning the Priority of Isolation**

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0-20</td>
</tr>
<tr>
<td>Medium</td>
<td>21-39</td>
</tr>
<tr>
<td>High</td>
<td>40-50</td>
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</tbody>
</table>
Minimal Requirements

- Hand hygiene after handling secretions, excretions or contaminated items from any patient.
- Isolation in a single room, if available, for airborne or particularly hazardous infections and for situations in which patients soil the room environment with secretions or excretions.
Thank You